SYSTEMS ENGINEERING
Research Center

Vehicle Systems Engineering and Integration Activities - Phase 4

Interim Technical Report SERC-2012-TR-015-4

March 31, 2012

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Contract Number: H98230-08-D-0171

DO2, TTO2, RT0026

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
31 MAR 2012	**Final**	

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Vehicle Systems Engineering and Integration Activities - Phase 4	**H98230-08-D-0171**
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
Bryzik /Dr. Walter	**RT 26-4**
	5e. TASK NUMBER **DO2 TTO2**
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
Stevens Institute of Technology Wayne State University	**SERC-2012-TR-015-4**
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
DASD (SE)	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release, distribution unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

TARDEC's mission is to conduct full service life cycle engineering support to the TACOM Life Cycle Management Command and the Program Executive Offices associated with it, for all DoD ground vehicle system acquisition and life cycle management. The TARDEC Systems Engineering Group is constantly looking for systems engineering methods, tools and procedures (MPT) to support this mission. TARDEC has found that many systems engineers from the automobile industry have significant experience in systems engineering (SE), but lack experience in some of the competencies deemed critical to systems engineering in the DoD workforce. This research will identify the differences between education needs of system engineers in both industry and the DoD workforce, and develop methods, processes and tools to address the shortfalls in educating SEs in the DoD workforce. This report summarizes work done in the phase 4 of the project on Vehicle Systems Engineering and Integration Activities - Phase 4

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**UU**	**10**	

This material is based upon work supported, in whole or in part, by the U.S. Department of Defense through the Systems Engineering Research Center (SERC) under Contract H98230-08-D-0171. SERC is a federally funded University Affiliated Research Center managed by Stevens Institute of Technology

RESEARCH TOPIC DESCRIPTION

TARDEC's mission is to conduct full service life cycle engineering support to the TACOM Life Cycle Management Command and the Program Executive Offices associated with it, for all DoD ground vehicle system acquisition and life cycle management. The TARDEC Systems Engineering Group is constantly looking for systems engineering methods, tools and procedures (MPT) to support this mission. TARDEC has found that many systems engineers from the automobile industry have significant experience in systems engineering (SE), but lack experience in some of the competencies deemed critical to systems engineering in the DoD workforce. This research will identify the differences between education needs of system engineers in both industry and the DoD workforce, and develop methods, processes and tools to address the shortfalls in educating SEs in the DoD workforce.

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1 INTRODUCTION

This report documents sixth quarter progress and seventh quarter plans for project RT26. Fifth quarter activities focused on the second case study of Task 3, the application of SE processes to Science and Technology (S&T) projects. The details of these developments are described in Section 2, Project Status. Plans for the next quarter are described in Section 3, Project Plans.

2 PROJECT STATUS

2.1 TASK 1: IDENTIFY TARDEC SE NEEDS

No activity. This task was completed in the first quarter.

2.2 TASK 2: IDENTIFY SE EDUCATION GAPS

No activity. This task was completed in the first quarter.

2.3 TASK 3: CASE STUDIES

In coordination with TARDEC, we are conducting two case studies. The first case study on requirements definition for versatile ground vehicles was previously completed and delivered. The second case study applying SE to Science and Technology (S&T) projects is in progress. The objective products of the second case study are snapshots of the RDECOM "Project Plan" at several points during the execution of a project. The Project Plan is RDECOM requirement (OPORD 10-065) that replaces the requirement for a Systems Engineering Management Plan. The Project Plan combines the Project Management Plan and the Systems Engineering Management Plan. In the current quarter, we completed drafts of the Project Plan as of the Stakeholder Needs Review, the System Requirements Review, and the Critical Design Review (we previously completed a draft Project Plan as of the Preliminary Design Review). We reviewed and discussed these drafts with TARDEC in a series of meeting. The draft Project Plan snapshots completed this quarter are attached as appendices.

2.3.1 Requirements Definition for Versatile Ground Vehicles

A presentation and draft report on the first case study were completed and previously delivered. The case study was presented and discussed at the SERC Annual Review.

2.3.2 Case Study No. 2: Application of SE to S&T Projects

In coordination with TARDEC, we are conducting two case studies. The first case study on requirements definition for versatile ground vehicles was previously completed and delivered. The second case study applying SE to Science and Technology (S&T) projects is in progress. The objective of the second case study were initially intended to illustrate TARDEC's Systems Engineering process applied to a real S&T project. Later TARDEC objectives shifted to illustrating the "Project Plan" at several points in the course of an S&T project, specifically at the technical reviews. The August 2010 RDECOM OPORD 10-065 folded the Systems Engineering Management Plan and Project Management Plan into a combined "Project Plan". Annex B to the RDECOM OPORD provided a template for the Project Plan. TARDEC's interest is to elucidate the template by way of an illustration. The current draft version of the example Project Plan is attached in the Appendix.

2.4 Task 4: Dissemination Packaging

A presentation and draft report on the first case study were previously delivered. The draft report from the second case study is attached in Appendix A.

3 PROJECT PLANS

This section describes project plans for the second quarter.

3.1 TASK 1: IDENTIFY TARDEC SE NEEDS

This task has been completed. No activity is planned.

3.2 TASK 2: IDENTIFY SE EDUCATION GAPS

This task has been completed. No activity is planned.

3.3 TASK 3: CASE STUDIES

TARDEC as continued to provide guidance regarding the content and level of detail desired in the Project Plan snapshots. In the following quarter we will complete the Project Plan snapshots.

3.4 TASK 4: DISSEMINATION

At the end of the next quarter, we plan to deliver a illustrations of the S&T Project Plan and associated SE artifacts as it would be at additional technical review points, for the second case study.

APPENDIX

MTRS COMMUNICATIONS AND SITUATION AWARENESS MAST – PROJECT PLAN

PDF including the Project plan and all Annexes are attached. Below are the Annexes:

ANNEX A: TECHNOLOGY TRANSITION AGREEMENT (TTA)

ANNEX B: MCSAM REQUIREMENT AND SUMMARY

ANNEX C: TECHNICAL REVIEW GUIDELINES

ANNEX D: TECHNICAL REVIEW CHECKLISTS

ANNEX E: REQUIREMENT SUMMARY

ANNEX F: MCSAM PP REQ. MANAGEMENT PLAN

ANNEX G: MCSAM PP CONF MANAGEMENT PLAN

ANNEX H: MCASAM RISK MANAGEMENT PLAN